PRE-INCIDENT PLANS

Leading Community Risk Reduction

Lubbock Fire Department Pre-Incident Plans

Christopher J. Angerer

Lubbock Fire Department

Lubbock, Texas

April 2005

Abstract

The problem was that the Lubbock Fire Department collected pre-incident information but did not prepare pre-incident plans. As a result, responders were not adequately prepared to handle emergencies at target hazard occupancies. The purpose of this applied research project was to develop a pre-incident plan format for the Lubbock Fire Department. Action research was used to answer the following questions about pre-incident plans:

1. Do national standards and recommended practices suggest how pre-incident planning should be accomplished?
2. What pre-incident planning methods are used by comparable fire departments?
3. What information is needed for pre-incident plans?
4. How should pre-incident plans be formatted?

Literature reviews, and surveys were the research procedures used. The results showed that formats of pre-incident plans vary. Most of the literature advocated the use of the Quick Access Preplan as an acceptable pre-incident plan format. The Quick Access Preplan was used as a basis for the Lubbock Fire Department pre-incident plan format. The recommendations were: (a) adopt the included pre-incident plan format, (b) begin training on site with first-due companies using the developed pre-incident plan, (c) coordinate pre-incident planning activities with an incident management system and produce an incident action plan, and (d) begin preplanning all apartment complexes 3 stories and taller.

Table of Contents

List of Tables

Introduction

The Lubbock Fire Department (LFD) was established in 1909 to provide fire protection for the citizens of the city of Lubbock. In the early 1950s, the Fire Prevention Division (FPD) was created within the LFD to help reduce fire hazards. In 1954, the FPD initiated a voluntary compliance inspection program whereby businesses and residences eliminated fire hazards found during inspections. These inspections were carried out exclusively by personnel in the FPD. In the mid 1970s, line personnel began performing inspection and pre-fire planning duties. In 1983, the city hired a consultant to evaluate fire department operations. The consultant determined that the LFD pre-fire planning process should be strengthened. Pre-incident planning information is still collected by LFD line firefighters today. The problem is that the LFD collects pre-incident information but does not prepare pre-incident plans. As a result, responders are not adequately prepared to handle emergencies at target hazard occupancies.

The purpose of this applied research project (ARP) is to develop a pre-incident plan format for the LFD. Action research will be used to answer the following questions about pre-incident plans:

1. Do national standards and recommended practices suggest how pre-incident planning should be accomplished?
2. What pre-incident planning methods are used by comparable fire departments?
3. What information is needed for pre-incident plans?
4. How should pre-incident plans be formatted?

Background and Significance

The LFD protects a 130 square mile area and a population of approximately 204,000 people. Lubbock is the largest city on the South Plains of West Texas and is home to three

universities, one community college, and some industrial business. The LFD employs 270 line personnel and operates out of 14 fire stations. The city is divided into two districts, and a district chief (DC) is in charge of each. The LFD provides its citizens fire, technical rescue, water rescue, hazardous materials, and medical first responder services.

The LFD has been collecting pre-incident planning information on target hazards in the city of Lubbock since the mid 1970s. According to the LFD Emergency Response Procedures, a target hazard is defined as occupancies that are likely to present severe and unusual challenges during fire department operations (Lubbock Fire Department, 2002). The policy states further that the target hazard challenges are due to severe life hazards, unusually large and complex facilities, hazardous contents, and hazardous processes (LFD, 2002). Currently the LFD collects preplan information on 180 structures in the city, and this information is updated on an annual basis. The information collected on the prefire plan form includes: (a) contact information, (b) water supplies, (c) protection systems components, (d) utilities, (e) building construction, (f) specific hazards, (g) nearby fire hydrant flow calculations, and (h) the building layout or map. If the building is a hazardous materials fixed-site facility, information on specific hazardous materials and hazardous processes will be collected. Appendix B contains the form that the LFD currently uses to collect preplan information.

Primarily, the LFD collects pre-incident information on the following: (a) large and complex businesses, (b) high-rise buildings, (c) large assembly occupancies, (d) dormitories, (e) schools, (f) hospitals, (g) nursing homes, (h) industrial occupancies, (i) hotels, and (j) hazardous materials fixed-site facilities. All of the preplanned buildings are occupied; vacant buildings are not preplanned by the LFD.

A database of occupancies to be preplanned is kept at LFD Fire Station #1 and on a shared computer server. One LFD DC has oversight of the entire prefire plan program. The DC sends an updated occupancy list to the station coordinators prior to the start of the new fiscal year. The station coordinators then divide the lists among the three shifts at their respective stations. The personnel at each station are charged with collecting the prefire plan information and updating the file before the end of the fiscal year. Each LFD engine company carries a file box or binder with the pre-fire plan forms for their response territories. Each of the DC's vehicles carries a filing box with all of the pre-fire plans for the whole city. After prefire plans have been updated, new copies of the prefire plan forms are placed in the engine company binder or file box for that response territory and in the DC vehicle. If the preplanned occupancy is a hazardous materials fixed-site facility, a copy of the prefire plan is also sent to the hazardous materials team. At the discretion of station officers and DCs, occupancies can be added or deleted from the preplan list at any time.

After prefire plan information has been collected and filed, the job of pre-incident planning is complete for the LFD. The LFD rarely if ever trains at target hazard occupancies using the collected prefire plan information. Carter and Rausch (1999, p. 235) state, "Prefire planning achieves the maximum benefit when the plans serve as the basis for periodic training sessions. An increased awareness of sites, combined with on-site practical drills, translate into improved operational techniques." Since the pre-fire plan information is carried in file boxes, it is usually not accessed until fire department units have arrived at the scene of an emergency. After giving an initial size-up, the incident commander, usually the DC, will consult the prefire plan information about the building. Because the prefire plan is the information collection document, much documentation must be sorted through to find the helpful information needed to

solve the emergency. The incident commander's job is made more difficult because the information collected on the LFD target hazard preplan form is not condensed for emergency scene use.

In the last two years many 3-story apartment complexes have been built in the city. Most, if not all, of these apartments have been built using lightweight trusses, and the LFD does not collect pre-incident information on apartment buildings. Francis Brannigan states, "Any fire department preplanning such a structure today would give serious attention to such trusses" (Brannigan, 1992, p. 517). Incident commanders formulating strategies and tactics will need to take into account the intricacies of lightweight building construction.

The topic of this ARP is directly related to many of the content areas of the National Fire Academy (NFA) Leading Community Risk Reduction course. Perhaps the most relevant of the content areas is Unit 2: Assessing Community Risk (National Fire Academy [NFA], 2003). Risk reduction objectives will be established using the assessing community risk step of the Community Risk Reduction Model (NFA, 2003). The topic of this research is also relevant to the five-year operational objectives of the United States Fire Administration (USFA). This research will support the third USFA objective "To promote within communities a comprehensive, multihazard risk reduction plan led by the fire service organization" (Executive Fire, 2003, p. II-2). "To respond appropriately in a timely manner to emerging issues" (Executive Fire, 2003, p. II-2), is another objective that will be supported by this ARP.

Research for this ARP will discover how other fire departments of comparable size accomplish pre-incident planning. Research will also reveal the following: (a) information to be collected for pre-incident plans, (b) an effective pre-incident plan format, and (c) standards and

recommended practices for pre-incident planning. Action research will be the method used to accomplish these objectives.

Literature Review

A literature review was conducted to determine a target hazard pre-incident planning format for the LFD. The literature was divided into three areas: information needed for pre-incident plans, standards and recommended practices for pre-incident planning, and pre-incident planning formats.

Information Needed for Pre-Incident Plans

According to Carter and Rausch (1999), the following information needs to be collected for pre-incident plans: building construction features, occupancy, exposures, utility disconnects, fire hydrant locations, water main sizes, and anything else that affects firefighting operations. "The features of any property can be placed into one of four categories nicknamed COPE: construction (C), occupancy (O), protection (P), exposure (E)" (Carter & Rausch, 1999, p. 227). Along the same lines, Cote (2003) suggests that building construction, occupancy, protection systems, site considerations, and outside assistance should be the data components included in a pre-incident plan.

Klaene and Sanders (2000) state that structural conditions, resource needs, contents, occupancy type, access limitations, water supply, and special challenges should be considered as pertinent information for pre-incident plans. In other words, "Such a plan describes important building features, life safety considerations, extinguishment factors, and general information about the building" (Klaene & Sanders, 2000, p. 20). Other topics to be included in a pre-incident plan narrative are: building name and address, owner/manager with telephone numbers,

emergency contact numbers, alarm company information, special life safety concerns, fire flow requirements, and salvage concerns (Klaene & Sanders, 2000).

Compton and Granito (2002, p. 51) say, “Pre-incident planning takes into account such factors as a buildings size, height and configuration, special life risks, exposures, construction types, occupancy classifications, and other hazards.”

C. H. Smoke (2005) suggests that the following items be considered when pre-incident planning: building layout, contents, construction, and the type and location of installed fire protection equipment. “Pre-incident planning should address the very topics that may likely become an issue during any significant emergency in the building” (Smoke, 2005, p. 292). Other information needed for the pre-incident plan includes: address, owner, means of access and entry, personnel hazards, fire behavior predictions, locations of stairs and elevators, ventilation systems, exposures, resource needs, estimated fire flow, water supply, and predicted strategies (Smoke, 2005).

The Fire Protection Systems for Incident Commanders student manual recommends that information concerning physical elements and site considerations, occupant considerations, water supplies and fire protection systems, and special hazards be included in a pre-incident plan (NFA, 2004). The Command and Control of Fire Department Operations at Multi-Alarm Incidents student manual identifies the following areas as information needed in a pre-incident plan: life hazard, construction, occupancy, fire protection features, internal and external exposures, fire department standard operating guidelines (SOGs), and available interagency assistance (NFA, 1995).

National Fire Protection Association (NFPA) 1620 recommends collecting information concerning the following for pre-incident plans: physical elements and site considerations,

occupant considerations, protection systems and water supplies, special hazards, and emergency operations (National Fire Protection Association [NFPA], 2003).

Standards and Recommended Practices for Pre-Incident Planning

NFPA 1620 is a national recommended practice for pre-incident planning. NFPA 1620 (2003) recommends that the following types of occupancies be pre-incident planned: assembly, educational, health care, detention and correctional, residential, residential board and care, mercantile, business, industrial, and warehouse and storage. Residential occupancies include hotels, motels, dormitories, and apartment buildings. According to NFPA 1620, a pre-incident plan is a document developed by gathering general and detailed data used by responding personnel to determine the resources and actions necessary to mitigate anticipated emergencies at a specific facility (NFPA 1620, 2003). In order to develop a pre-incident plan, the following has to be accomplished: data collection, organization of data, preparation of the plan, plan distribution, review and evaluation of the plan, and training on the plan (NFPA 1620, 2003). In order for the plan to work correctly at the emergency scene, the plan should be coordinated with an incident management system (IMS), and all participants should be aware of their responsibilities (NFPA 1620, 2003). "During an emergency incident, the pre-incident plan should be the foundation for decision-making and provide important data that will assist the incident commander in developing appropriate strategies and tactics for managing the incident" (NFPA 1620, 2003, p. 8).

NFPA 13E recommends that firefighters working in properties protected by automatic sprinkler systems need to have thorough knowledge of the property gained from pre-incident planning (NFPA, 2000). Through pre-incident planning, firefighters are able to discover which

properties have standpipe systems that enable them to place fire streams quickly in areas that cannot be reached conveniently with hoselines from apparatus (NFPA, 2000).

NFPA 1021 advocates that officers should be able to develop a pre-incident plan that covers all of the required elements according to pre-incident planning policies and procedures (NFPA 1021, 2003). NFPA 1021 also states that officers should be able to determine the number and type of units assigned to respond to an emergency based on pre-incident planning information (NFPA 1021, 2003).

NFPA 1710 (2004) states that it is the responsibility of the fire department to determine operational requirements for pre-incident planning, and target hazard occupancies should be given particular attention. NFPA 170 (2002) illustrates the symbols for use in pre-incident plan drawings.

Pre-Incident Planning Formats

According to Carter and Rausch (1999), the pre-incident plan should be organized into a format that is usable on the fireground. The pre-incident plan usually consists of a data sheet, that contains only valuable information that is not likely to change, and the building layout (Carter & Rausch, 1999). Carter and Rausch also state, “Prefire planning achieves the maximum benefit when the plans serve as the basis for periodic training sessions. An increased awareness of sites, combined with on-site practical drills, translate into improved operational techniques” (1999, p. 235).

C. H. Smoke (2005) suggests that the NFA Quick Access Prefire Plan (QAP) is a good format for a pre-incident plan. Included with the QAP should be a plot plan allowing an overhead view of the entire property and a floor plan showing the major internal structural features of the building (Smoke, 2005). NFPA 170 (2002) illustrates the symbols for use in pre-

incident plan drawings. Smoke (2005) states that pictures or drawings of the plot plan and floor plan can be worth more than words written in the QAP. Training is an essential part of the pre-incident planning format that allows company members to familiarize themselves with hazards and features of an occupancy (Smoke, 2005). Levy (2000) also advocates using the pre-incident plan for on-site drills and building familiarization.

Klaene and Sanders (2000, p. 44) state, "Pre-incident plans include both a narrative and drawings." They suggest that critical information be highlighted or color-coded to draw attention to it (Klaene & Sanders, 2000). Drawings should include a view of the property and specific floor layouts of the building (Klaene & Sanders, 2000). According to Klaene and Sanders (2000, p. 52), "A pre-incident plan that is much more than two double-spaced typewritten pages in outline format plus a drawing page tends to be less useful during initial operations." Angle, Gala, Harlow, Lombardo, and Maciuba, (2001), also advocate using a text section, site plan, and floor plan as part of a pre-incident plan format.

The NFA Command and Control of Fire Department Operations at Multi-Alarm Incidents student manual (1995) advocates the use of a QAP. The QAP is a standard form composed of three parts: a building diagram, building information, and strategy information (NFA, 1995). The NFA (1995, p. 5-22) also states, "The QAP is one page. The building information and the strategic/tactical suggestions are written on one side; the building diagram is on the other side." The NFA (2004) Fire Protection Systems for Incident Commanders student manual emphasizes preplanning the use of the IMS as well as pre-incident planning an occupancy. The NFA (2004) also recommends that pre-incident plans be used as a training tool. In fact, "The pre-incident planning process should include a provision for training in those portions of the plan that involve unique or unusual evolutions or operations" (NFA, 2004, p. 2-

15). The NFA (2004) utilizes NFPA 1620 as a basis for pre-incident planning. An example of a QAP can be found in Appendix H (NFA, 1995, p. 5-27).

NFPA 1620 (2003) recommends that pre-incident plans should include information about the physical site, operation features, personnel, and protection features. NFPA 1620 also emphasizes the need for the pre-incident plan to be coordinated with an IMS (NFPA 1620, 2003). An additional aspect of the pre-incident planning format includes training on the portions of the plan that involve unique or unusual operations (NFPA 1620, 2003). Training on pre-incident plans was recommended as a result of a firefighter fatality in Phoenix, Arizona (NFPA, 2002). Practicing the plan provides an opportunity to test the plan (NFPA 1620, 2003), and testing the plan gives responders an opportunity to fine tune and update the plan (Cote, 2003).

Summary

The literature is consistent concerning the information needed for pre-incident plans. For the most part, the literature supported that information concerning site considerations, occupant considerations, protection systems, and special hazards should be included in a pre-incident plan. Standards and recommended practices advocate that pre-incident plans should be developed, and incident commanders should use these plans as a foundation for decision making at the emergency scene. The literature points heavily to the use of a QAP for a pre-incident planning format. Training on the pre-incident plan is a common thread in the literature. In addition, the literature also emphasizes the need for the pre-incident plan to be coordinated with an IMS.

Procedures

Research Methodology

Action research was the method used to determine a pre-incident plan format and develop a pre-incident plan document. The research procedures used for this ARP began with the

literature review at the Learning Resource Center (LRC) at the NFA in July 2004. Additional literature reviews were conducted from November 2004 through February 2005 at the Texas Tech University (TTU) Library and the LFD Training Academy Library located in Lubbock, Texas; and at the Texas Commission on Fire Protection (TCFP) Library in Austin, Texas. Also, literature pertaining to the ARP was found using Internet searches. Search engines such as Google and FindArticles.com were used. Keywords used in Internet searches included: prefire, pre-incident, prefire plan, pre-incident plan, and target hazard. Web site searches yielded information from the NFPA, Firehouse, and the NFA.

The literature review focused on journals, books, reports, and prior Executive Fire Officer (EFO) ARPs to determine a pre-incident planning format. Applicable NFPA standards and recommended practices were researched to determine their requirements and recommendations.

As part of the literature review, an external survey was prepared to determine what methods comparable fire departments in the Southwest United States use for pre-incident planning. Survey questions were designed to elicit information regarding departmental demographics, pre-incident planning data collected, preplanned occupancies, pre-incident planning formats, pre-incident planning training, and use of incident action plans (IAPs). Information from NFPA 1620 was used to formulate questions about the types of occupancies to be preplanned and what information should be collected for pre-incident plans. A copy of the survey and the cover letter are included in Appendix C. A list of cities with populations exceeding 25,000 was obtained using an Internet search (Demographia, 2002). Using Google, Internet searches were conducted by fire department name to find fire department addresses. Surveys were primarily sent to fire departments in the Southwest United States with populations

exceeding 200,000. A portion of the surveys were sent to cities with populations less than 200, 000. The cities with populations less than 200,000 are Texas cities with which the city of Lubbock establishes benchmarks. In all, 59 surveys were sent to fire department chiefs, and 44 completed and returned the surveys. A list of cities to which surveys were sent is included in Appendix G.

Included in the 59 cities to which surveys were sent, are 16 Texas cities to which the City of Lubbock is routinely compared. The City of Lubbock administration uses comparison information from these cities to establish benchmarks for city operations. Comparisons of the LFD pre-incident planning program were made with the pre-incident planning programs of the 16 cities in the Discussion section of this ARP. A list of the 16 cities and their populations are included in Appendix G. The Lubbock city administration has recently started comparing Lubbock to 22 Texas full-service cities. These cities provide the same types of services that Lubbock provides including electrical power generation and airport service. Some of the 16 cities mentioned earlier are included in the 22 full-service cities. A list of the 22 full-service cities and their populations are included in Appendix G. The results of the survey are included in the Results section and Appendices D, E, and F.

Limitations

The information used from the published material researched for this ARP is taken as authoritative and unbiased. It is assumed the responses to the external survey are factual and represent the true policies of the responding departments.

Very few national standards and recommended practices were found that deal with pre-incident planning formats. Only one national recommended practice was found that deals specifically with pre-incident planning.

Much of the literature emphasized the importance of pre-incident planning but did not discuss specifically how pre-incident plans should be formatted. Also, the types of occupancies needing to be preplanned were widely discussed in the literature.

Although samples of pre-incident plan documents were solicited from other departments in the external survey, very few were provided. This author had hoped to reference more of these documents to make recommendations for the LFD pre-incident planning format. Also, a question concerning the use of the QAP concept was not included in the survey.

Definition of Terms

Pre-incident plan. A document developed by gathering general and detailed data used by responding personnel to determine the resources and actions necessary to mitigate anticipated emergencies at a specific facility (NFPA 1620, 2003, p. 6).

Quick Access Prefire Plan. A document designed for use at the emergency incident scene that is composed of, a building diagram, building information, and strategy suggestions (NFA, 1995, p. 5-21).

Target Hazard. Buildings or occupancies that require special tactics and strategies because of their size or type of occupancy (Bennett, 1999, p. 6)

Knox Box. A rapid entry system specifically developed for the fire department. With one master key, access can be gained to commercial and residential properties.

Results

This ARP began as a result of difficulties that this author encountered while using pre-incident plan documents at actual emergencies. The results of this ARP are obtained from the literature review and an external survey sent to 59 fire departments, of which 44 were returned. The literature review and the external survey results are used to address the research questions.

Do National Standards And Recommended Practices Suggest How Pre-Incident Planning Should Be Accomplished?

The only standards and recommended practices found by this author addressing pre-incident planning were from the NFPA. The only recommended practice found that addressed pre-incident planning specifically was NFPA 1620. All other NFPA standards and recommended practices dealt indirectly with pre-incident planning.

According to NFPA 1620, a pre-incident plan is a document developed by gathering general and detailed data used by responding personnel to determine the resources and actions necessary to mitigate anticipated emergencies at a specific facility (NFPA 1620, 2003). NFPA 1710 (2004) states that it is the responsibility of the fire department to determine operational requirements for pre-incident planning, and that target hazard occupancies should be given particular attention. NFPA 1620 (2003) recommends that the following types of occupancies be pre-incident planned: assembly, educational, health care, detention and correctional, residential, residential board and care, mercantile, business, industrial, and warehouse and storage. Residential occupancies include hotels, motels, dormitories, and apartment buildings. NFPA 1021 emphasizes that officers should be able to develop a pre-incident plan that covers all of the required elements according to pre-incident planning policies and procedures (NFPA 1021, 2003). NFPA 1021 also states that officers should be able to determine the number and type of units assigned to respond to an emergency based on pre-incident planning information (NFPA 1021, 2003). In order to develop a pre-incident plan, the following has to be accomplished: data collection, organization of data, preparation of the plan, plan distribution, review and evaluation of the plan, and training on the plan (NFPA 1620, 2003). Pre-incident planning training was also the focus of Question 9 in the external survey.

NFPA standards emphasize the importance of pre-incident planning. For instance, NFPA 13E recommends that firefighters working in properties protected by automatic sprinkler systems need to have thorough knowledge of the property gained from pre-incident planning (NFPA, 2000). Through pre-incident planning, firefighters are able to discover which properties have standpipe systems that enable them to place fire streams quickly in areas that cannot be reached conveniently with hoselines from apparatus (NFPA, 2000).

The literature review revealed that pre-incident planning should be coordinated with an IMS. In order for the plan to work correctly at the emergency scene, the plan should be coordinated with an IMS and all participants should be aware of their responsibilities (NFPA 1620, 2003). The IMS deals with choosing the appropriate strategy to handle the emergency. "During an emergency incident, the pre-incident plan should be the foundation for decision-making and provide important data that will assist the incident commander in developing appropriate strategies and tactics for managing the incident" (NFPA 1620, 2003, p. 8).

What Pre-Incident Planning Methods Are Used By Comparable Fire Departments?

Forty-four of 59 surveys were returned, and 40 of the surveyed fire departments reported that they pre-incident plan target hazard occupancies, and four departments reported that they did not. Thirty of these departments report that they use a standardized form to collect pre-incident planning information, but only 19 of the responding agencies base their pre-incident planning program on NFPA 1620. Line/shift personnel are responsible for pre-incident planning in the majority of agencies surveyed. Twenty-nine of the 40 agencies that do pre-incident planning conduct training with first-due companies after the pre-incident plan has been created, but only 15 reported producing an IAP associated with an IMS. The majority of surveyed agencies use binders as a means of access to pre-incident plan information at the emergency scene.

Fourteen of 16 surveys sent to the comparison Texas cities listed in Appendix G were returned. Thirteen of the surveyed fire departments reported that they pre-incident plan target hazard occupancies, and one department reported that it did not. Ten of these departments report that they use a standardized form to collect pre-incident planning information, but only 5 of the responding agencies base their pre-incident planning program on NFPA 1620. Line/shift personnel are responsible for pre-incident planning in the majority of agencies surveyed. Six of the 13 agencies that do pre-incident planning conduct training with first-due companies after the pre-incident plan has been created, but only 4 reported producing an IAP associated with an IMS. The majority of surveyed agencies use binders as a means of access to pre-incident plan information at the emergency scene.

Nineteen of 22 surveys sent to the full service Texas cities listed in Appendix G were returned. Eighteen of the surveyed fire departments reported that they pre-incident plan target hazard occupancies, and one department reported that it did not. Fourteen of these departments report that they use a standardized form to collect pre-incident planning information, but only 8 of the responding agencies base their pre-incident planning program on NFPA 1620. Line/shift personnel are responsible for pre-incident planning in the majority of agencies surveyed. Eleven of the 18 agencies that do pre-incident planning conduct training with first-due companies after the pre-incident plan has been created, but only 8 reported producing an IAP associated with an IMS. The majority of surveyed agencies use binders as a means of access to pre-incident plan information at the emergency scene.

Question eight on the survey asks the responding agency what types of occupancies they preplanned. The responses are listed in Table 1. The responses in Table 1 are listed first by the total responses from 40 cities that preplan of 44 returned. Second, total responses from 13 cities

that preplan of 16 comparison Texas cities are shown, and third, total responses from 18 cities that preplan of the 22 full service Texas cities.

Table 1

Total Cities Preplanning Occupancies by Type

Type	All	16 Comparison	22 Full Service
Assembly *	36	12	17
Business *	28	11	15
Detention and Correctional *	30	9	14
Educational *	36	13	18
Hazardous Materials Fixed Facilities *	38	12	17
Health Care *	34	12	16
Industrial *	38	12	17
Mercantile *	27	9	13
Residential – Dorms, Hotels, & Motels *	28	10	14
Residential Board and Care Facilities *	30	10	14
Residential – Apartments	36	11	16
Warehouse and Storage Facilities *	22	7	10
Other Occupancies	8	2	2

Note. Occupancies preplanned currently by the LFD are indicated by an asterisk (*).

Question 11 on the survey asks the responding agency what types of information they collect during the pre-incident planning process. The responses are listed in Table 2. The responses in Table 2 are listed first by the total responses from 40 cities that preplan of 44 returned. Second, total responses from 13 cities that preplan of 16 comparison Texas cities are shown, and third, total responses from 18 cities that preplan of the 22 full service Texas cities.

Table 2

Total Cities Collecting Pre-Incident Planning Data by Type

Type	All	16 Comparison	22 Full Service
Areas of Safe Refuge	14	2	5
Building Access *	38	11	16
Building Construction Features *	38	12	17
Emergency Contact Persons *	39	13	18
Environmental Concerns *	19	4	8
Exposures	36	12	17
Fire Alarm & Communication Systems *	35	11	16
Fire Department Connections *	40	13	18
Fire Flows - Needed/Available *	21	5	9
Fire Protection Systems *	40	13	18
Floor Layouts *	37	12	17
Hazardous Materials *	39	12	17
Knox Box Location *	37	11	16
Occupant Information	36	11	16
Site Access Restrictions	32	8	13
Site Maps *	35	11	15
Special Hazards *	38	12	17
Utilities Shut-Off Locations *	40	13	18
Water Supplies *	39	12	17

Note. Data collected currently by the LFD are indicated by an asterisk (*). Numbers are compiled from responses to the survey instrument.

What Information Is Needed For Pre-Incident Plans?

The literature review yielded consistent results for information that should be collected for pre-incident plans. According to Carter and Rausch (1999), the following information needs to be collected for pre-incident plans: building construction features, occupancy, exposures, utility disconnects, fire hydrant locations, water main sizes, and anything else that affects firefighting operations. Klaene and Sanders (2000) state that structural conditions, resource needs, contents, occupancy type, access limitations, water supply, and special challenges should be considered as pertinent information for pre-incident plans. Compton and Granito (2002, p. 51) say, "Pre-incident planning takes into account such factors as a buildings size, height and configuration, special life risks, exposures, construction types, occupancy classifications, and other hazards." C. H. Smoke (2005) suggests that the following items be considered when pre-incident planning: building layout, contents, construction, and type and location of installed fire protection equipment. The Fire Protection Systems for Incident Commanders student manual recommends that information concerning physical elements and site considerations, occupant considerations, water supplies and fire protection systems, and special hazards be included in a pre-incident plan (NFA, 2004). The Command and Control of Fire Department Operations at Multi-Alarm Incidents student manual identifies the following areas as information needed in a pre-incident plan: life hazard, construction, occupancy, fire protection features, internal and external exposures, fire department standard operating guidelines (SOGs), and available interagency assistance (NFA, 1995). NFPA 1620 recommends collecting information concerning the following for pre-incident plans: physical elements and site considerations, occupant considerations, protection systems and water supplies, special hazards, and emergency operations (NFPA, 2003). C. H. Smoke says, "Pre-incident planning should address the very

topics that may likely become an issue during any significant emergency in the building" (2005, p. 292).

Additional information can be added that will be of help at the emergency scene. Authors from the literature agree on additional information that should be included in pre-incident plans. Supplementary information for the pre-incident plan includes: address, owner, means of access and entry, personnel hazards, fire behavior predictions, locations of stairs and elevators, ventilation systems, exposures, resource needs, estimated fire flow, water supply, and predicted strategies (Smoke, 2005). Topics to be included in a pre-incident plan narrative are: building name and address, owner/manager with telephone numbers, emergency contact numbers, alarm company information, special life safety concerns, fire flow requirements, and salvage concerns (Klaene & Sanders, 2000).

How Should Pre-Incident Plans Be Formatted?

According to Carter and Rausch (1999), the pre-incident plan should be organized into a format that is usable on the fireground. The pre-incident plan usually consists of a data sheet, that contains only valuable information that is not likely to change, and the building layout (Carter & Rausch, 1999). NFPA 1620 (2003) recommends that pre-incident plans should include information about the physical site, operation features, personnel, and protection features. Klaene and Sanders (2000, p. 44) state, "Pre-incident plans include both a narrative and drawings." They suggest that critical information be highlighted or color-coded to draw attention to it (Klaene & Sanders, 2000). Drawings should include a view of the property and specific floor layouts of the building (Klaene & Sanders, 2000). Angle et al. (2001), also advocate using a text section, site plan, and floor plan as part of a pre-incident plan format.

C. H. Smoke (2005) suggests that the NFA QAP is a good format for a pre-incident plan. The NFA (1995, p. 5-22) states, “The QAP is one page. The building information and the strategic/tactical suggestions are written on one side; the building diagram is on the other side.” Included with this QAP should be a plot plan allowing an overhead view of the entire property and a floor plan showing the major internal structure features of the building (Smoke, 2005). Smoke (2005) also states that pictures or drawings of the plot plan and floor plan can be worth more than words written in the QAP. The NFA Command and Control of Fire Department Operations at Multi-Alarm Incidents student manual (1995) also emphasizes the use of a QAP. According to the NFA, the QAP is a standard form composed of three parts: a building diagram, building information, and strategy information (NFA, 1995).

Additional results from the literature review stressed the need for the pre-incident planning to be coordinated with an IMS. Results also emphasized using the pre-incident plan as a training tool. The NFA (2004) Fire Protection Systems for Incident Commanders student manual suggests preplanning the use of the IMS as well as pre-incident planning an occupancy. The NFA (2004) also recommends that pre-incident plans be used as a training tool. In fact, “The pre-incident planning process should include a provision for training in those portions of the plan that involve unique or unusual evolutions or operations” (NFA, 2004, p. 2-15). NFPA 1620 also emphasizes the need for the pre-incident plan to be coordinated with an IMS and training on the portions of the plan that involve unique or unusual operations (NFPA 1620, 2003). Practicing the plan provides an opportunity to test and refine the plan (NFPA 1620, 2003).

Final Product

A pre-incident plan form and a pre-incident plan data collection form were developed as a result of the information gained in the literature review and external survey. Copies of both forms are included in Appendix A.

Discussion

Pre-incident planning is nothing new to the fire service. Survey responses for this ARP indicate that the overwhelming majority of these departments have a pre-incident planning program in place for target hazard occupancies. Although most fire departments are preplanning their target hazard occupancies, there is not a standardized format for pre-incident planning in the United States.

The premise of this ARP was to determine a suitable format for pre-incident planning. In preparing a pre-incident planning format, a number of things had to be determined. First, what information should be included in the pre-incident plan? Second, is there a standardized format for pre-incident plans? How does the LFD's pre-incident planning program compare with other fire departments of like size?

Research for this ARP showed that there is consistency in the literature concerning the information that should be included in the pre-incident plan. Building construction features, occupancy, exposures, utility disconnects, fire hydrant locations, water main sizes, and anything else that affects firefighting operations should be included in a pre-incident plan (Carter & Rausch, 1999). In addition, Klaene and Sanders (2000) suggest that resource needs, access limitations, contents, and special challenges should also be included in pre-incident plans. Smoke (2005) states that the type and location of installed fire protection equipment should be

included with the information stated above. Also, NFA courseware states that life hazard concerns and available interagency assistance should be included in a pre-incident plan (NFA, 1995). In addition to all of the information already stated, NFPA 1620 (2003) advocates that information concerning emergency operations should be included as well. Supplementary information for the pre-incident plan includes: address, owner, means of access and entry, personnel hazards, fire behavior predictions, locations of stairs and elevators, ventilation systems, estimated fire flow, and predicted strategies (Smoke, 2005). The external survey results showed that preplanning information being collected is consistent with the information provided in the literature review. Table 2 on page 21 of this ARP shows the survey responses about pre-incident plan information to be collected.

The results of the research showed that there is no standardized format for pre-incident planning. Carter and Rausch (1999) state that a pre-incident plan usually consists of a data sheet and the building layout. Klaene and Sanders (2000) agree that a pre-incident plan should include a narrative and a drawing that shows a view of the property and floor layouts. On the other hand, NFPA 1620 (2003) recommends that pre-incident plans should include information about the physical site, operation features, personnel, and protection features.

Other authors advocate the use of the NFA QAP as a format for pre-incident plans. C.H. Smoke (2005) advocates that building information be on one side and building drawings be on the other side of a QAP. According to the NFA Command and Control of Fire Department Operations at Multi Alarm Incidents student manual, the QAP is composed of a building diagram, building information, and strategy information (NFA, 1995).

Of the 40 departments surveyed who preplanned target hazard occupancies, 30 indicated that they use a standardized form to collect pre-incident planning information and 10 reported

that they did not use a standardized form. Of the 30 departments using standardized pre-incident planning forms, only seven sent copies of them when they returned the survey. Although these pre-incident plan formats shared some common information, none were exactly alike in format.

Additional results from the literature review stressed the need for the pre-incident planning to be coordinated with an IMS. Results also emphasized using the pre-incident plan as a training tool. The NFA (2004) Fire Protection Systems for Incident Commanders student manual suggests preplanning the use of the IMS as well as pre-incident planning an occupancy. The NFA (2004) also recommends that pre-incident plans be used as a training tool. In fact, "The pre-incident planning process should include a provision for training in those portions of the plan that involve unique or unusual evolutions or operations" (NFA, 2004, p. 2-15). NFPA 1620 also emphasizes the need for the pre-incident plan to be coordinated with an IMS and training on the portions of the plan that involve unique or unusual operations (NFPA 1620, 2003). This finding was not part of the original study. This author was looking primarily for a written pre-incident plan format. This finding stresses the need for coordinating the emergency operations aspects of the pre-incident plan with an IMS and training on the pre-incident plan prior to an actual emergency.

The survey results showed that the majority of the 40 departments conducting pre-incident plans are preplanning the types of occupancies listed in NFPA 1620. Over half of these departments preplan apartment complexes. The LFD does not preplan apartment complexes, and this is the only category where the LFD does not compare with the departments surveyed. The survey results also showed that the majority of departments are collecting similar information for pre-incident plans. Areas of safe refuge and environmental concerns are not addressed as frequently in preplans as other areas. The LFD does address the environmental concerns in its

present preplan document but does not address areas of safe refuge or hours of operation. Twenty-nine of 40 departments claim to conduct on-site training sessions with first due companies after preplan information has been collected on target hazard occupancies. The LFD does not conduct this type of training. Almost 60 percent of the surveyed departments did not produce an IAP as a result of their training sessions at these target hazards. The LFD is currently preparing IAPs for certain planned events but not for pre-incident plans.

The survey results showed that the majority of the 13 departments conducting pre-incident plans from the 16 comparison Texas cities are preplanning the types of occupancies listed in NFPA 1620. Half of these departments preplan apartment complexes. Again, the LFD does not preplan apartment complexes, and this is the only category where the LFD does not compare with the 13 comparison departments surveyed. The survey results also showed that the majority of departments are collecting similar information for pre-incident plans. Fire flows needed, areas of safe refuge, hours of operation, and environmental concerns are not addressed as frequently in preplans as other areas. The LFD does address the fire flows needed and environmental concerns in its present preplan document but does not address areas of safe refuge or hours of operation. Only 6 of 13 departments claim to conduct on-site training sessions with first due companies after preplan information has been collected on target hazard occupancies. The LFD does not conduct this type of training, and the majority of the departments surveyed do not conduct this type of training either. Almost 70 percent of the surveyed departments did not produce an IAP as a result of their training sessions at these target hazards. Again, the LFD is currently preparing IAPs for certain planned events but not for pre-incident plans.

The survey results showed that the majority of the 19 departments conducting pre-incident plans from the 22 Full-Service Texas cities are preplanning the types of occupancies

listed in NFPA 1620. Over half of these departments preplan apartment complexes. Again, the LFD does not preplan apartment complexes, and this is the only category where the LFD does not compare with the 19 full-service city departments surveyed. The survey results also showed that the majority of departments are collecting similar information for pre-incident plans. Fire flows needed, areas of safe refuge, and environmental concerns are not addressed as frequently in preplans as other areas. The LFD does address the fire flows needed and environmental concerns in its present preplan document but does not address areas of safe refuge or hours of operation. Eleven of 19 departments claim to conduct on-site training sessions with first due companies after preplan information has been collected on target hazard occupancies. Again, the LFD does not conduct this type of training. Almost 53 percent of the surveyed departments did not produce an IAP as a result of their training sessions at these target hazards. Once again, the LFD is currently preparing IAPs for certain planned events but not for pre-incident plans.

For the most part, the LFD is collecting information for pre-incident plans consistent with the literature and the external survey. The LFD is using the information collection document as the pre-incident plan. This, however, is not consistent with the literature. The literature advocates using an information collection document and a separate pre-incident plan document. This author is not able to conclusively determine what comparable departments are doing in this area, because a question pertaining to whether the information collection document is used as the preplan document was not asked in the survey.

According to the literature, the LFD needs to coordinate its preplanning activity with an IMS, and also needs to conduct training using the pre-incident plans. The LFD is not consistent with the surveyed Texas fire departments in the area of training with pre-incident plans. Many of the surveyed Texas departments do train using the pre-incident plans.

The LFD would benefit from using a true pre-incident plan document instead of using the information collection document at the emergency scene. The job of the incident commander at the emergency scene would be made easier if the pre-incident information collected was reduced to a one or two page document. Incident commanders waste a tremendous amount of time trying to sift through multiple documents to obtain needed information. This author has experienced this personally. LFD first-due companies would benefit from on-site training sessions using the developed pre-incident plan. On-site training, using the plan, would allow responders to practice for a real incident should one occur. The LFD also needs to coordinate pre-incident planning activities with an IMS. The LFD currently produces an IAP for other preplanned activities and has experienced great success in these preplanned activities because of the use of an IMS and a prepared IAP. Consistent with the literature and the external survey, the LFD would benefit from preplanning apartment complexes. Information about apartment complexes not currently available to responders would help with emergency operations at these occupancies. Ultimately the citizens of Lubbock would benefit from a better prepared fire department.

Recommendations

Based on the results of the research for this ARP, the LFD should stop using the pre-incident plan information collection document as the pre-incident plan itself. Information from the literature review and the external survey was used to develop a proposed pre-incident plan form and a pre-incident plan data collection form included as Appendix A.

Based on the literature and the comparisons with similar fire departments, the following recommendations for the LFD are made:

1. Adopt the LFD Quick Assess Pre-Incident Plan document prepared for this IAP. This document is based on the NFA QAP format and is consistent with NFPA 1620.

2. Begin training on site with first-due companies using the developed pre-incident plan. On-site training, using the plan, would allow responders to practice for a real incident should one occur. This training should be coordinated by the first-due DC for the occupancy.
3. Coordinate pre-incident planning activities with an IMS. As a part of this, an IAP should be constructed when the on-site pre-incident plan training is conducted. This is another way to practice with the IMS before a real emergency event occurs.
4. Begin preplanning all apartment complexes 3 stories and taller. Because of the influx of 3-story apartment complexes into the Lubbock area, this would allow responders to be more prepared for incidents that are likely to occur.

The use of a pre-incident plan coordinated with an IMS and training on the plan will lead to more efficient operations at target hazard occupancies in Lubbock.

The following are some recommendations for those who wish to replicate this study in their own organization:

1. Conduct surveys with similar departments to determine how they are conducting preplanning activities.
2. Ask for detailed pre-incident plans and pre-incident planning information collection documents when conducting these surveys and also ask questions specifically related to the QAP.
3. Determine whether your department coordinates preplanning activities with an IMS.
4. Ask your incident commanders whether your department's pre-incident plans are helpful at the emergency scene.

5. Talk to leaders of your department to determine what roadblocks within the organization may prevent implementation of the new pre-incident planning format.

References

Angle, J., Gala, M., Harlow, D., Lombardo, W., & Maciuba, C. (2001). *Firefighting strategies and tactics*. Albany, NY: Delmar.

Bennett, J. A. (1999). Planning and the fire service - what lies ahead part 1. *American Fire Journal, 51*, 6+.

Brannigan, F. L. (1992). *Building construction for the fire service* (3rd ed.). Quincy, MA: National Fire Protection Association.

Carter, H. R., & Rausch, E. (1999). *Management in the fire service* (3rd ed.). Quincy, MA: National Fire Protection Association.

Compton, D., & Granito, J. (Eds.). (2002). *Managing fire and rescue services*. Washington, DC: International City/County Management Association.

Cote, A. E. (Ed.). (2003). *Fire protection handbook* (19th ed., Vol. 1). Quincy, MA: National Fire Protection Association.

Demographia. (2002). *US Places (Cities & Villages) 25,000 and Over: 2002 Estimates* [Data File]. Available from Demographia, http://www.demographia.com/db-city2002.htm

Executive fire officer program operational policies and procedures applied research guidelines. (2003). Emmitsburg, MD: Federal Emergency Management Agency.

Klaene, B. J., & Sanders, R. E. (2000). *Structural fire fighting*. Quincy, MA: National Fire Protection Association.

Klaene, B., & Sanders, R. (2000). Pre-incident planning of tactical operations. *Nfpa Journal, 94*(6), 20+.

Levy, A. (2000). *Command post: preparing for and conducting pre-incident planning*. Retrieved November 28, 2004, from http://www.firehouse.com/training/drills/2000/cp1.html

Lubbock fire department procedures manual. (2002). Lubbock, TX: Lubbock Fire Department.

National Fire Academy. (1995). *Command and control of fire department operations at multi-alarm incidents - student manual* (3rd ed.). Emmitsburg, MD: Author.

National Fire Academy. (2003). *Leading community risk reduction - student manual* (1st ed.). Emmitsburg, MD: Author.

National Fire Academy. (2004). *Fire protection systems for incident commanders - student manual* (Pilot 2nd ed.). Emmitsburg, MD: Author.

National Fire Protection Association. (2000). *Recommended practice for fire department operations in properties protected by sprinkler and standpipe systems* (NFPA 13E). Quincy, MA: Author.

National Fire Protection Association. (2002). *Standard for fire safety symbols* (NFPA 170). Quincy, MA: Author.

National Fire Protection Association. (2002). *Standard for professional competence of responders to hazardous materials incidents* (NFPA 472). Quincy, MA: Author.

National Fire Protection Association. (2002). *Supermarket fire phoenix, arizona* (Fire Investigations). Quincy, MA: Author.

National Fire Protection Association. (2003). *Recommended practice for pre-incident planning* (NFPA 1620). Quincy, MA: Author.

National Fire Protection Association. (2003). *Standard for fire officer professional qualifications* (NFPA 1021). Quincy, MA: Author.

National Fire Protection Association. (2004). *Standard for the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by career fire departments* (NFPA 1710). Quincy, MA: Author.

Smoke, C. H. (2005). *Company officer* (2nd ed.). Clifton Park, NY: Thomson Delmar Learning.

Appendix A

Lubbock Fire Department Quick Access Pre-Incident Plan

Business or Building Name:

Building Address:

Emergency Contact:

Building Description:

Roof Construction:

Floor Construction:

Knox Box Location:	**Occupancy Type:**
Hazards to Personnel:	
Water Supply Locations: **1st –** **2nd –** **3rd –**	**Available Flow:** **1st –** **2nd –** **3rd –**

Percentage of Involvement Requirements:

	25%	50%	75%	100%
GPM				
Engines				

Exposures: Alpha ☐ Bravo ☐ Charlie ☐ Delta ☐ See Site Drawing

Fire Behavior Prediction:

Predicted Strategies:

Problems Anticipated:

Standpipe: **Yes ☐ No ☐**	**FDC Location:**
Sprinkler: **Yes ☐ No ☐**	**FDC Location:**
Fire Alarm System: **Yes ☐ No ☐**	**Panel Location:**

Lubbock Fire Department Quick Access Pre-Incident Plan
Site / Building Drawing

Complete a drawing of the building showing any pertinent information such as street locations, hydrant locations, specific location of chemicals within the facility, fire protection systems, utility cut offs, other special building systems, and any other specific hazards.

Lubbock Fire Department
Pre-Incident Plan Building Survey

Class: _____ **Date:** _____

Business Name: _____

Address: _____ **Phone:** _____

Emergency Contacts:

1. _____ **Phone** _____

2. _____ **Phone** _____

Occupancy Type

Assembly ☐ Educational ☐ Health Care ☐ Detention/Correctional ☐
Residential Apartments ☐ Residential Board & Care ☐ Mercantile/Business ☐
Industrial ☐ Warehouse/Storage ☐

Building Construction

Building Dimensions (LxWxH) Number of Floors

Construction Type: I ☐ II ☐ III ☐ IV ☐ V ☐

Exterior Walls: Metal ☐ Wood ☐ Concrete ☐ Concrete Block ☐ Brick Veneer ☐

Roof Construction

Roof Supports: Wood Truss ☐ Metal Truss ☐ Wood Joist ☐ Steel Joist ☐
Other _____

Roof Decking Material: Wood ☐ Metal ☐ Concrete ☐ Other _____

Roof Covering: _____

Roof Shape or Configuration: _____

Roof Attachments: Signs ☐ A/C Units ☐ Other _____

Floor Construction

Floor Supports: Wood Truss ☐ Metal Truss ☐ Wood Joist ☐ Steel Joist ☐
Other _____

Floor Decking Material: Wood ☐ Metal ☐ Concrete ☐ Other _____

Ceiling: Sheetrock ☐ Suspended ☐ Wood ☐ Other _____

Interior Wall Coverings: Sheetrock ☐ Plaster ☐ Concrete ☐ Brick ☐ Metal ☐
Other _____

Basement: None ☐ Size _____ Best Entry Point _____

Water Supplies

1st Choice Location _____

Distance _____ Color _____ Available Flow _____

2nd Choice Location _____

Distance _____ Color _____ Available Flow _____

3rd Choice Location _____

Distance _____ Color _____ Available Flow _____

Protection Systems

Alarm System: None ☐ Alarm Panel Location _____

Alarm Company _____

Sprinkler System: Wet ☐ Dry ☐ None ☐ Completely Sprinkled ☐ Partially Sprinkled ☐

FDC Location _____

Sprinkler Valve Location_____

Fire Pump: None ☐ Location _____

List Additional Systems on the Back of this Sheet.

Standpipe System: Wet ☐ Dry ☐ None ☐

FDC Location _____

Hose Cabinets: Yes ☐ No ☐
How many per floor _____ Which floors _____

Standpipe Riser Location _____

Outlet Threads 2 ½" National Standard ☐ Iron Pipe ☐
Outlet Threads 1 ½" National Standard ☐ Iron Pipe ☐

Fire Pump: None ☐ Location _____

Specialized Extinguishing Systems: Location _____

Agent _____ Shutoff Location _____

Fire Doors: Yes ☐ No ☐
Type and Location(s) _____

Utilities

Gas Meter Location _____

Water Shutoff Location _____

Electric Meter Location _____
Do Not Pull Meter ☐

Heating and A/C Systems (Check All that Apply)
Gas ☐ Electric ☐ Boiler ☐ Chiller ☐
Location of Shutoff _____

Special Hazards

Hazardous Materials: Yes ☐ No ☐ Hazard Class _____

Location _____ Amount Present _____

Use the Back of this Sheet for Additional Hazardous Materials

Confined Spaces: Yes ☐ No ☐ Location(s) _____

Electrical or Mechanical Hazards ☐ N/A
Locations _____

Ventilation

Most Feasible: Horizontal ☐ Vertical ☐ Positive Pressure ☐ Trench ☐

Fixed Ventilation System Yes ☐ No☐
Location of Controls _____

Can A/C System be used for Smoke Removal? Yes ☐ No ☐
Location of Controls _____

Roof Openings Doors ☐ Hatches ☐ Monitors ☐ Skylights ☐ Vents ☐

Which Stairwell Opens to the Roof? (Show on building drawing)_____

Elevators and Stairs

Type: Passenger ☐ Freight ☐ Electric ☐ Hydraulic ☐

Fire Service Operation: Yes ☐ No ☐ Key Location _____

Service Company _____ Phone _____

Elevator Exits: Top ☐ Side ☐ Other _____

Emergency Shutoff Location _____

Stairwell Locations _____

Access

Best Entry Point _____ Knox Box Location _____

Fire Behavior Prediction

Exposures: Alpha ☐ Bravo ☐ Charlie ☐ Delta ☐

Predicted Strategies

Problems Anticipated

Updated: _____ **Company:** _____

Appendix B

LFD Current Pre-Fire Plan Form

LUBBOCK FIRE DEPARTMENT

TARGET HAZARD PRE-FIRE PLAN **Page 1 of Part I**

CLASS: A **DATE:** / /

BUSINESS NAME: _____

ADDRESS: _____ **PHONE:** (806)- -

EMERGENCY CONTACTS: (NIGHTS & WEEKENDS)

1.) _____ **PHONE:** (806)- -

2.) _____ **PHONE:** (806)- -

FIRE HYDRANTS

FIRST CHOICE LOCATION: _____
DISTANCE: _____ **DIRECTION:** _____ **COLOR:** _____

SECOND CHOICE LOCATION: _____
DISTANCE: _____ **DIRECTION:** _____ **COLOR:** _____

THIRD CHOICE LOCATION: _____
DISTANCE: _____ **DIRECTION:** _____ **COLOR:** _____

BEST ENTRY POINT:

SPRINKLER SYSTEMS: ☐ WET ☐ DRY ☐ HALON ☐ NONE
☐ ALL ☐ PARTIAL
☐ AUXILIARY PUMP LOCATION _____
FIRE DEPT. TIE-IN LOCATION _____
SPRINKLER VALVE LOCATION _____

STANDPIPE SYSTEMS: ☐ WET ☐ DRY ☐ NONE
FIRE DEPT. TIE-IN LOCATION
HOSE CABINETS: ☐ NO ☐ YES (NO. / FLOORS) _____
RISER LOCATION _____
OUTLETS: ☐ 1 1/2" **THREADS:** ☐ NATIONAL STANDARD ☐ IRON PIPE
OUTLETS: ☐ 2 1/2" **THREADS:** ☐ NATIONAL STANDARD ☐ IRON PIPE

UTILITIES:
GAS METER LOCATION _____
WATER METER LOCATION _____
ELECTRIC METER LOCATION _____
☐ DO NOT PULL

HEATING AND A/C SYSTEMS: ☐ GAS ☐ ELECTRIC ☐ BOILER
LOCATION OF SHUT OFF: _____

STAIRWELLS:
☐ DOORS LOCKED FROM STAIRWELL SIDE
☐ DOORS LOCKED FROM FLOOR SIDE
☐ DOORS NOT LOCKED

FIRE DOORS: ☐ NO ☐ Y ES _____
TYPE & LOCATION: _____
SECURITY SYSTEMS: ☐ ADT ALARM CO. _____
☐ OTHER _____
☐ LOCK BOX LOCATION _____

BUILDING CONSTRUCTION

(A) ☐ MOSTLY ☐ ALL : ☐ FRAME ☐ METAL CLAD ☐ MILL
☐ ORDINARY ☐ FIRE RESISTIVE
☐ ALL METAL ☐ OTHER _____

(B) WALLS: ☐ WOOD ☐ METAL ☐ CONCRETE BLOCK ☐ BRICK
☐ VENEER ☐ OTHER _____

(C) CEILING: ☐ FALSE ☐ SHEETROCK ☐ SUSPENDED ☐ COCKLOFT
☐ OTHER _____

(D) BASEMENT: ☐ NONE ☐ SIZE X ☐ SPRINKLED
BEST ENTRY POINT _____

(E) ROOF ATTACHMENTS ☐ NONE ☐ PENTHOUSE ☐ GRAVITY TANK
☐ SIGNS ☐ A/C UNITS
☐ OTHER _____

SPECIAL HAZARDS

UPDATE:	/ /	COMPANY:	-
UPDATE:	/ /	COMPANY:	-
UPDATE:	/ /	COMPANY:	-
UPDATE:	/ /	COMPANY:	-
UPDATE:	/ /	COMPANY:	-
UPDATE:	/ /	COMPANY:	-

HAZARDOUS MATERIALS INFORMATION
CLASS A/H or B/H SITES

Page 1 of Part II **Page 3 of 6**

TYPES OF OPERATIONS CONDUCTED AT THE FACILITY: (such as manufacturing, storage and distribution of chemicals)

HOURS OF OPERATION FOR THE FACILITY AND THE NUMBER OF EMPLOYEES ON-SITE:

INFORMATION ON BUILDING: (approximate square footage, number of stories, etc.)

*** See attached map sheet ***

THE SIZE, QUANTITY AND TYPES OF CONTAINERS FOR STORED CHEMICALS THAT ARE OF CONCERN TO THE FIRE DEPARTMENT

TYPE OF CHEMICAL	QUANTITY	SIZE OF CONTAINER

EVACUATION INFORMATION FOR THE IMMEDIATE AREA, INCLUDING NUMBER OF RESIDENTS AND SPECIAL RISK FACILITIES SUCH AS NURSING HOMES AND SCHOOLS:

Page 2 of Part II **Page 4 of 6**

SEWER SYSTEM AND DRAINAGE INFORMATION TO DETERMINE WHERE THE CHEMICAL RUNOFF WILL GO (storm drains, manhole covers, ditches, etc.)

ANY SPECIAL PRECAUTIONS TO BE OBSERVED OR ANY INFORMATION THAT MIGHT BE OF CONCERN DURING INITIAL OPERATIONS

LUBBOCK FIRE DEPARTMENT

FIRE FLOW TEST – Excel File

Page 1of Part IV **Page 5 of 6**

DATE: / /

TARGET HAZARD NAME: _____

ADDRESS: _____

TEST HYDRANT LOCATION: _____

FLOW HYDRANT #1 LOCATION: _____

FLOW HYDRANT #2 LOCATION: _____

STATIC PRESSURE AT TEST HYDRANT	
RESIDUAL PRESSURE AT TEST HYDRANT	
PRESSURE DROP AT TEST HYDRANT	
FLOW PRESSURE AT HYDRANT #1	
GPM FLOW AT HYDRANT #1	
FLOW PRESSURE AT HYDRANT #2	
GPM FLOW AT HYDRANT #2	
TOTAL FLOW AVAILABLE DURING TEST	
TOTAL GPM AVAILABLE AT 20 psi RESIDUAL	
TOTAL GPM AVAILABLE AT 0 psi RESIDUAL	

Lubbock Fire Department
Site Plan Map

Part III **Page 6 of 6**

(TO BE COMPLETED ON ALL CLASSES OF HAZARDS)

Complete a drawing of the building showing any pertinent information such as street locations, hydrant locations, specific location of chemicals within the facility, location of sewer system openings, utility cut offs, other special building systems and any other specific hazards.

Appendix C

Pre-Incident Plans Survey

Chris Angerer
District Chief
cangerer@mail.ci.lubbock.tx.us
1515 E. Ursuline St.
Lubbock, Texas 79403
806-775-2634

January 22, 2005

Dear Chief,

I am a second year student of the National Fire Academy Executive Fire Officer program. I recently completed the Leading Community Risk Reduction course, and I am conducting a survey as part of an applied research project entitled, “Lubbock Fire Department Pre-Incident Plans.”

I am asking that you or someone that you designate complete this survey, and return it to me by February 21, 2005. A pre-addressed, stamped envelope has been enclosed.

The information gathered will be combined with information from other fire departments from around the United States and your department will not be identified by name. The compiled information will then be used to complete the research and help the Lubbock Fire Department establish a pre-incident plan format.

Thank you for your time and consideration. If you would like a copy of the survey results, please check the appropriate box on the survey form and include your contact information.

Sincerely,

Chris Angerer
District Chief

National Fire Academy
Executive Fire Officer Program
Applied Research Project

Lubbock Fire Department Pre-Incident Plans

Please provide responses to all of the items. Place a check mark in the blank that corresponds with your answer. This survey was also sent to other fire departments from around the United States. The applied research project will include the results of the survey. Thank you for your input.

1. Which of the following best describes your department?
   _____ Fully paid fire department
   _____ Volunteer fire department
   _____ Combination fire department

2. What is the approximate population served by your department?
   _____ Less than 200,000
   _____ 200,000 – 300,000
   _____ 300,001 – 400,000
   _____ 400,001 – 500,000
   _____ Over 500,000

3. What is the approximate number of uniformed fire personnel in your department?
   _____ Less than 100
   _____ 100 – 200
   _____ 201 – 300
   _____ 301 – 400
   _____ 401 – 500
   _____ Over 500

4. Does your department do pre-incident planning for target hazard occupancies?
If your answer is "No," please skip items #5 thru #15.
   _____ Yes
   _____ No

5. Is your department's target hazard pre-incident planning program based on NFPA 1620: Recommended Practice for Pre-Incident Planning?
   _____ Yes
   _____ No

6. Who in your department is primarily responsible for pre-incident planning of target hazards? (In other words, who actually collects the pre-incident planning information?)
   _____ Line/shift personnel
   _____ Fire prevention bureau personnel
   _____ Fire protection engineer(s)
   _____ Other: _____

7. If your department's line/shift personnel are responsible for pre-incident planning, are they provided specific training in how to conduct pre-incident planning?
   _____ Yes
   _____ No

8. Your department conducts pre-incident planning on what types of occupancies?
   Check all that apply

_____ Assembly	_____ Residential Board and Care Facilities
_____ Educational	_____ Mercantile
_____ Health Care	_____ Business
_____ Detention and Correctional	_____ Industrial
_____ Residential – Dorms, Hotels	_____ Warehouses and Storage Facilities
_____ Residential - Apartments	_____ Hazardous Materials Fixed Facilities

   _____ Other: _____

9. Does your department conduct on-site training sessions with first-due fire companies at target hazards after pre-incident planning information has been collected?
   _____ Yes
   _____ No

10. If your department conducts on-site training sessions at target hazards, are Incident Action Plans (IAPs) produced during these sessions for future reference?
    _____ Yes
    _____ No

11. What types of information does your department collect during the pre-incident planning process?
    Check all that apply

_____ Building construction features	_____ Site access restrictions
_____ Fire protection systems	_____ Knox Box location
_____ Water Supplies	_____ Hours of operation
_____ Fire flows – Needed/Available	_____ Fire department connections
_____ Exposures	_____ Emergency contact persons
_____ Occupant information	_____ Areas of safe refuge
_____ Building access	_____ Hazardous Materials
_____ Utilities shut-off locations	_____ Special Hazards
_____ Environmental concerns	_____ Fire alarm & communication systems
_____ Site maps	_____ Floor layouts

    _____ Other: _____

12. How is your pre-incident planning information accessed at the emergency scene?
Check all that apply

_____ Binders
_____ On-board filing boxes or cabinets
_____ Other: _____

_____ On-board computers
_____ Mobile Data Terminals

_____

_____

13. If your department uses computer software for storing and accessing pre-incident planning information, what is the brand name of the software?

_____

_____

14. Does your department use a standardized form to collect pre-incident planning information?
_____ Yes
_____ No

15. Does your department have a pre-incident planning training lesson plan?
_____ Yes
_____ No

If you answered "Yes" to questions 14 and 15, would you please include a copy of the lesson plan and pre-incident planning form when you return this survey? If you would rather email electronic copies of the lesson plan and form, email them to:

cangerer@mail.ci.lubbock.tx.us

Please include the following information. It will not be included in the applied research project.

Department name:

Contact name:

Contact phone number:

Email address:

If you would like a copy of the survey results, please check here. _____

Thank you once again for giving of your time to complete this survey.

Appendix D

Survey Results from 44 of 59 Cities

National Fire Academy
Executive Fire Officer Program
Applied Research Project

Lubbock Fire Department Pre-Incident Plans

1. Which of the following best describes your department?
   - **44** Fully paid fire department
   - **0** Volunteer fire department
   - **0** Combination fire department

2. What is the approximate population served by your department?
   - **5** Less than 200,000
   - **10** 200,000 – 300,000
   - **6** 300,001 – 400,000
   - **8** 400,001 – 500,000
   - **15** Over 500,000

3. What is the approximate number of uniformed fire personnel in your department?
   - **0** Less than 100
   - **12** 100 – 200
   - **8** 201 – 300
   - **4** 301 – 400
   - **3** 401 – 500
   - **17** Over 500

4. Does your department do pre-incident planning for target hazard occupancies?

If your answer is "No," please skip items #5 thru #15.

   - **40** Yes
   - **4** No

5. Is your department's target hazard pre-incident planning program based on NFPA 1620: Recommended Practice for Pre-Incident Planning?
   - **19** Yes
   - **19** No

6. Who in your department is primarily responsible for pre-incident planning of target hazards? (In other words, who actually collects the pre-incident planning information?)
   - **36** Line/shift personnel
   - **4** Fire prevention bureau personnel
   - **0** Fire protection engineer(s)
   - **4** Other: _____

7. If your department's line/shift personnel are responsible for pre-incident planning, are they provided specific training in how to conduct pre-incident planning?
   28 Yes
   11 No

8. Your department conducts pre-incident planning on what types of occupancies?
   Check all that apply

36	Assembly	**30**	Residential Board and Care Facilities
36	Educational	**27**	Mercantile
34	Health Care	**28**	Business
30	Detention and Correctional	**38**	Industrial
28	Residential – Dorms, Hotels	**36**	Warehouses and Storage Facilities
22	Residential - Apartments	**38**	Hazardous Materials Fixed Facilities
8	Other: _____		

9. Does your department conduct on-site training sessions with first-due fire companies at target hazards after pre-incident planning information has been collected?
   29 Yes
   11 No

10. If your department conducts on-site training sessions at target hazards, are Incident Action Plans (IAPs) produced during these sessions for future reference?
    15 Yes
    23 No

11. What types of information does your department collect during the pre-incident planning process?
    Check all that apply

38	Building construction features	**32**	Site access restrictions
40	Fire protection systems	**37**	Knox Box location
39	Water Supplies	**22**	Hours of operation
21	Fire flows – Needed/Available	**40**	Fire department connections
36	Exposures	**39**	Emergency contact persons
36	Occupant information	**14**	Areas of safe refuge
38	Building access	**39**	Hazardous Materials
40	Utilities shut-off locations	**38**	Special Hazards
19	Environmental concerns	**35**	Fire alarm & communication systems
35	Site maps	**37**	Floor layouts
1	Other: _____		

12. How is your pre-incident planning information accessed at the emergency scene?
Check all that apply

32	Binders	**8**	On-board computers
6	On-board filing boxes or cabinets	**10**	Mobile Data Terminals
2	Other:		

13. If your department uses computer software for storing and accessing pre-incident planning information, what is the brand name of the software?
CADZONE, VISIO, Firehouse, Intergraph, Sunpro, High Plains, Firezone, and Proprietary Software

14. Does your department use a standardized form to collect pre-incident planning information?
30 Yes
10 No

15. Does your department have a pre-incident planning training lesson plan?
10 Yes
30 No

Appendix E

Survey Results from 14 of 16 Comparison Texas Cities

National Fire Academy
Executive Fire Officer Program
Applied Research Project

Lubbock Fire Department Pre-Incident Plans

1. Which of the following best describes your department?
   - **14** Fully paid fire department
   - **0** Volunteer fire department
   - **0** Combination fire department

2. What is the approximate population served by your department?
   - **5** Less than 200,000
   - **7** 200,000 – 300,000
   - **2** 300,001 – 400,000
   - **0** 400,001 – 500,000
   - **0** Over 500,000

3. What is the approximate number of uniformed fire personnel in your department?
   - **0** Less than 100
   - **8** 100 – 200
   - **4** 201 – 300
   - **2** 301 – 400
   - **0** 401 – 500
   - **0** Over 500

4. Does your department do pre-incident planning for target hazard occupancies?
If your answer is "No," please skip items #5 thru #15.
   - **13** Yes
   - **1** No

5. Is your department's target hazard pre-incident planning program based on NFPA 1620: Recommended Practice for Pre-Incident Planning?
   - **5** Yes
   - **8** No

6. Who in your department is primarily responsible for pre-incident planning of target hazards? (In other words, who actually collects the pre-incident planning information?)
   - **12** Line/shift personnel
   - **1** Fire prevention bureau personnel
   - **0** Fire protection engineer(s)
   - **0** Other: _____

7. If your department's line/shift personnel are responsible for pre-incident planning, are they provided specific training in how to conduct pre-incident planning?
   8 Yes
   5 No

8. Your department conducts pre-incident planning on what types of occupancies?
   Check all that apply

12	Assembly	**10**	Residential Board and Care Facilities
13	Educational	**9**	Mercantile
12	Health Care	**11**	Business
9	Detention and Correctional	**12**	Industrial
10	Residential – Dorms, Hotels	**11**	Warehouses and Storage Facilities
7	Residential - Apartments	**12**	Hazardous Materials Fixed Facilities
2	Other: _____		

9. Does your department conduct on-site training sessions with first-due fire companies at target hazards after pre-incident planning information has been collected?
   6 Yes
   7 No

10. If your department conducts on-site training sessions at target hazards, are Incident Action Plans (IAPs) produced during these sessions for future reference?
    4 Yes
    9 No

11. What types of information does your department collect during the pre-incident planning process?
    Check all that apply

12	Building construction features	**8**	Site access restrictions
13	Fire protection systems	**11**	Knox Box location
12	Water Supplies	**6**	Hours of operation
5	Fire flows – Needed/Available	**13**	Fire department connections
12	Exposures	**13**	Emergency contact persons
11	Occupant information	**2**	Areas of safe refuge
11	Building access	**12**	Hazardous Materials
13	Utilities shut-off locations	**12**	Special Hazards
4	Environmental concerns	**11**	Fire alarm & communication systems
11	Site maps	**12**	Floor layouts
0	Other: _____		

12. How is your pre-incident planning information accessed at the emergency scene?
Check all that apply

10	Binders	**1**	On-board computers
0	On-board filing boxes or cabinets	**4**	Mobile Data Terminals
1	Other:		

13. If your department uses computer software for storing and accessing pre-incident planning information, what is the brand name of the software?
Firehouse and Firezone

14. Does your department use a standardized form to collect pre-incident planning information?
10 Yes
3 No

15. Does your department have a pre-incident planning training lesson plan?
4 Yes
9 No

Appendix F

Survey Results from 19 of 22 Full-Service Texas Cities

National Fire Academy
Executive Fire Officer Program
Applied Research Project

Lubbock Fire Department Pre-Incident Plans

1. Which of the following best describes your department?
   - **19** Fully paid fire department
   - **0** Volunteer fire department
   - **0** Combination fire department

2. What is the approximate population served by your department?
   - **5** Less than 200,000
   - **7** 200,000 – 300,000
   - **2** 300,001 – 400,000
   - **0** 400,001 – 500,000
   - **5** Over 500,000

3. What is the approximate number of uniformed fire personnel in your department?
   - **0** Less than 100
   - **8** 100 – 200
   - **4** 201 – 300
   - **2** 301 – 400
   - **0** 401 – 500
   - **5** Over 500

4. Does your department do pre-incident planning for target hazard occupancies?
If your answer is "No," please skip items #5 thru #15.
   - **18** Yes
   - **1** No

5. Is your department's target hazard pre-incident planning program based on NFPA 1620: Recommended Practice for Pre-Incident Planning?
   - **8** Yes
   - **10** No

6. Who in your department is primarily responsible for pre-incident planning of target hazards? (In other words, who actually collects the pre-incident planning information?)
   - **17** Line/shift personnel
   - **2** Fire prevention bureau personnel
   - **0** Fire protection engineer(s)
   - **0** Other: _____

7. If your department's line/shift personnel are responsible for pre-incident planning, are they provided specific training in how to conduct pre-incident planning?
   12 Yes
   6 No

8. Your department conducts pre-incident planning on what types of occupancies?
   Check all that apply

17	Assembly	**14**	Residential Board and Care Facilities
18	Educational	**13**	Mercantile
16	Health Care	**15**	Business
14	Detention and Correctional	**17**	Industrial
14	Residential – Dorms, Hotels	**16**	Warehouses and Storage Facilities
10	Residential - Apartments	**17**	Hazardous Materials Fixed Facilities
2	Other: _____		

9. Does your department conduct on-site training sessions with first-due fire companies at target hazards after pre-incident planning information has been collected?
   11 Yes
   7 No

10. If your department conducts on-site training sessions at target hazards, are Incident Action Plans (IAPs) produced during these sessions for future reference?
    8 Yes
    10 No

11. What types of information does your department collect during the pre-incident planning process?
    Check all that apply

17	Building construction features	**13**	Site access restrictions
18	Fire protection systems	**16**	Knox Box location
17	Water Supplies	**11**	Hours of operation
9	Fire flows – Needed/Available	**18**	Fire department connections
17	Exposures	**18**	Emergency contact persons
16	Occupant information	**5**	Areas of safe refuge
16	Building access	**17**	Hazardous Materials
18	Utilities shut-off locations	**17**	Special Hazards
8	Environmental concerns	**16**	Fire alarm & communication systems
15	Site maps	**17**	Floor layouts
0	Other: _____		

12. How is your pre-incident planning information accessed at the emergency scene?
Check all that apply

15	Binders	**3**	On-board computers
1	On-board filing boxes or cabinets	**7**	Mobile Data Terminals
1	Other:		

13. If your department uses computer software for storing and accessing pre-incident planning information, what is the brand name of the software?
Firehouse, Firezone, and Proprietary Software

14. Does your department use a standardized form to collect pre-incident planning information?
14 Yes
4 No

15. Does your department have a pre-incident planning training lesson plan?
7 Yes
11 No

Appendix G

Survey Cities and Populations

Phoenix	Arizona	1,371,960		Lincoln	Nebraska	232,362
Tucson	Arizona	503,151		Las Vegas	Nevada	508,604
Mesa	Arizona	426,841		Henderson	Nevada	206,153
Glendale	Arizona	230,564		Albuquerque	New Mexico	463,874
Scottsdale	Arizona	215,779		Oklahoma	Oklahoma	519,034
Chandler	Arizona	202,016		Tulsa	Oklahoma	391,908
Los Angeles	California	3,798,981		Memphis	Tennessee	648,882
San Diego	California	1,259,532		♦ Houston	Texas	2,009,834
San Jose	California	900,443		♦ Dallas	Texas	1,211,467
San Francisco	California	764,049		♦ San Antonio	Texas	1,194,222
Long Beach	California	472,412		♦ Austin	Texas	671,873
Fresno	California	445,227		♦ El Paso	Texas	577,415
Sacramento	California	435,245		♦ Fort Worth	Texas	567,516
Oakland	California	402,777		♦ ♣ Arlington	Texas	349,944
Santa Ana	California	343,413		♦ ♣ Corpus Christi	Texas	278,520
Anaheim	California	332,642		♦ ♣ Plano	Texas	238,091
Riverside	California	274,226		♦ ♣ Garland	Texas	219,646
Stockton	California	262,835		♦ ♣ Irving	Texas	196,119
Bakersfield	California	260,969		♦ ♣ Laredo	Texas	191,538
Fremont	California	206,856		♦ ♣ Amarillo	Texas	177,010
Modesto	California	203,555		♦ ♣ Pasadena	Texas	145,034
Denver	Colorado	560,415		♦ ♣ Grand Prairie	Texas	135,303
Colorado Springs	Colorado	371,182		♦ ♣ Mesquite	Texas	128,776
Aurora	Colorado	286,028		♦ ♣ Waco	Texas	115,749
Wichita	Kansas	355,126		♦ ♣ Abilene	Texas	115,225
New Orleans	Louisiana	473,681		♦ ♣Carrollton	Texas	115,107
Baton Rouge	Louisiana	225,702		♦ ♣ Wichita Falls	Texas	102,926
Kansas City	Missouri	443,471		♦ ♣ Midland	Texas	95,829
St. Louis	Missouri	338,353		♦ ♣ Odessa	Texas	90,961
Omaha	Nebraska	399,357				

Figures were obtained from Demographia.com at www.demographia.com/db-city2002.htm

♣ 16 Comparison Texas Cities

♦ 22 Full Service Texas Cities

Appendix H

Quick Access Prefire Plan (QAP)

Building Address:				
Building Description: **Roof Construction:** **Floor Construction:**				
Occupancy Type:			**Initial Resources Required:**	
Hazards to Personnel:				
Location of Water Supply:			**Available Flow:**	
	Estimated Fire Flow			
Level of Involvement	*25%*	*50%*	*75%*	*100%*
Estimated Fire Flow				
Fire Behavior Prediction:				
Predicted Strategies:				
Problems Anticipated:				
❑ **Standpipe:**	❑ **Sprinklers:**		❑ **Fire Detection:**	